

SM358

Revision Guide

The examination for SM358 will take place in October (please see your StudentHome page for the precise date and time). We have carefully designed the paper to be fair, and hope that you will find it to be very reasonable. Please note that, in Open University terms, *The Quantum World* has a relatively small population, and the ability of the Open University to present such modules in the future depends crucially on the percentage of students that sit the exam.

The last few weeks before the examination are a time when you will want to revise and consolidate the knowledge and skills that you have developed on SM358. You may have your own tried-and-tested ways of revising at the end of a module, but here are some of our suggestions.

1. iCMA questions

In order to pass SM358, you must reach a threshold of satisfactory engagement with at least seven of the ten core assignments (TMAs 01–04 and iCMAs 51–56) at least two of which must be TMAs. However, this is a *minimum* requirement. In the context of revision, you are strongly advised to tackle *all* the iCMAs because they provide such good preparation for the exam. Some of the questions in Part 1 of the exam will be similar in type to questions in iCMAs 51–56, and many of the skills needed throughout the exam are covered by these iCMAs.

You can always revisit any iCMAs you have already completed, and this is an effective way to revise because you will probably get different variants of the questions a second time around. If you get stuck on a particular question, you can click through quickly and read the full solution, which you may wish to print out. Check that you understand the principles of the solution and then try another variant of the same question to confirm that you can do questions of this type. *If you can fluently answer questions such as these, you will have made excellent preparation for the exam.*

We have also prepared three Revision Medleys iCMAs, each containing 12 questions, spanning the whole of SM358 and drawn from iCMAs 51–56. These will be available from the Study Planner on the SM358 website in August. Although there are no new questions in the medleys, tackling selections like this is an excellent way of getting ready for the exam. Note, however, that the Revision Medleys do not count towards the threshold for satisfactory engagement, so it is essential to meet this threshold *before* tackling the Revision Medleys.

2. TMA questions

Take a careful look at the TMA questions and your answers to them. Note your tutor's comments and study any specimen answers that your tutor may have provided. You have already invested a great deal of thought on these questions, so it should be relatively easy to reconstruct the arguments needed to get high marks on any similar questions. If you are unsure about the answer to any question, take a look at the screencasts of TMA solutions, which can be viewed by visiting *Screencasts* section of the website.

3. Worked examples and exercises

The worked examples in the chapters illustrate how to carry out key tasks, and each is marked by a flag indicating the skill that is being demonstrated. It would be a good idea to look through these worked examples again, making sure that you follow the methods that are used. Some of the exercises also provide useful revision material.

4. Additional exercises

Sets of additional exercises are available from the *Study resources* section of the website. The problems are split into four groups covering Background Maths, Book 1, Book 2 and Book 3. There are about 150 problems, so you will probably not have the time or energy to tackle all of them. Full answers are provided, so you may decide to tackle some problems yourself, but to treat the majority as worked examples. Whichever way you do it, these problems are a valuable resource, and you can use them to see how to tackle the most common question types.

5. Chapter summaries and glossaries

Look at the summaries and achievement lists at the end of each chapter in the three books; these indicate the most important topics and skills in the chapter. To help with this, all the chapter summaries have been collected together in a document that can be downloaded from the *Exam revision* section of the website.

As you read a summary, you will probably need to refer back to parts of the chapter to remind yourself of the details and the meaning of the terms used. It would be helpful to have the glossaries at hand while doing this. You may also like to skim through the glossaries, making note of any points that are unclear to you.

6. Past paper screencasts and Elluminate tutorials

Screencasts showing tutors solve questions from the 2007 exam paper are available from the *Exam revision* section of the website. We hope that these screencasts will give you a direct understanding of how to tackle typical exam questions.

In September, one or two Elluminate tutorials will be given on preparing for the SM358 exam. Please see the website for more details.

7. Specimen exam and past exam papers

The specimen exam paper is available from the *Exam revision* section of the website. This is a fair reflection of the type and level of question that may appear on the main paper, though of course topics may vary from year to year.

First pay attention to the format of the specimen paper. The examination paper that you will tackle in October will be identical to that of the specimen paper; this means that time spent familiarizing yourself with the instructions on the front page, and at the start of each part of the specimen paper, will reduce the time needed to read the instructions in the exam, and leave more time for answering questions.

Note that Part 1 of the exam contains 12 questions, but you can get full marks for answering 10 of these. This gives you a choice of strategy. First, you can choose to try 10 questions, omitting the 2 questions that are least attractive to you. Alternatively, you can try all 12 questions in Part 1, and we will count your 10 best marks. The second option may be attractive because it allows you to get one or two questions wrong without losing any marks, and some students benefit significantly from this. However, you will be using up time in tackling 12 questions, so we strongly advise you to move on Parts 2, 3 and 4 after spending a maximum of 90 minutes on Part 1. If you spend longer than this you may risk running out of time in the rest of the paper. A compromise would be to complete your 10 favorite questions in Part 1; if this takes 90 minutes, do the remaining parts next, and finally complete the remaining questions in Part 1 if you have enough time at the end.

The specimen paper is accompanied by an Equations booklet (available from the *Exam revision* section of the website). Make sure that you can recognize all the equations in this booklet. For revision purposes, you may find it helpful to annotate the physics equations with their names and the meanings of any symbols used (although you will not be able to take your copy into the exam). Make sure you understand the typical circumstances in which these equations might be used. You will be provided with an identical booklet of equations in the exam, although

it will not be annotated in any way. During the exam, the ability to locate a relevant equation in the booklet quickly (or to remember it without consulting the booklet) will help considerably.

It is probably best to tackle the specimen paper in an uninterrupted three-hour session at some time in the middle of your revision period. Have an unannotated copy of the Equations booklet, a calculator and a clock handy, but cut yourself off from all other study materials. Treat the specimen paper just as you would the main paper, without consulting the answers as you proceed. Choose the questions you prefer and stop after the allotted time, whether you have finished or not. Alternatively, you may prefer to tackle each part of the specimen exam in four separate timed sessions.

Once you have completed the specimen exam, look up the answers and note any places where you might have scored more highly. The specimen exam is from the same stable as the main paper, so any lessons learnt here are likely to pay dividends in the main exam. At a later stage, you may like to tackle, or at least treat as worked examples, the questions from the specimen exam that you chose to omit. You may also have another go at any questions you got wrong, just to confirm your understanding.

Take a note of how long the specimen paper took you. Were you in danger of running out of time? If so, this may be because you are needing to think too hard — either because you are not sure of what to do next in a calculation, or because mathematical manipulations are taking you a long time. If you think that the time constraint is a problem, please have another look at the iCMAs, TMAs or additional problems, and see if a little extra practice can help to increase your fluency and speed your working.

The suggested timings given on separate parts of the exam are a useful way of keeping pace. Under exam conditions, it is best not to spend too long stuck on a particular question; it is generally better to move on and gain marks from other questions, although of course a balance must be struck between this and leaving too many loose ends.

Past exam papers are highly relevant, and it would be a very good idea to tackle them in the same way as the specimen exam. These papers are available from OUSA via www.open.ac.uk/ousa/. Screencast solutions for some questions of the 2007 exam are available on the website, but you may like to tackle questions yourself either before, or long after, seeing these.

8. Final comments

We do not recommend tackling exam papers from SM355, the predecessor of SM358. Although some SM355 exam questions are still relevant for SM358, others are not. With the wide range of revision tools listed above, it is probably best not to use SM355 papers unless you ask your tutor which questions are likely to be relevant.

Finally, remember that you don't have to know everything in SM358 to be able to get a good pass. You can be selective about what you revise, and can omit some topics that you find particularly difficult or less interesting. It would be a serious handicap to leave out a whole book, but it would be less of a problem to leave out individual chapters, provided you do not mind restricting your choice of questions. Even if you are far behind with SM358, there is still time to catch up. If you follow some of the revision strategies described above, you may surprise yourself with how well you do.